

Wanhua Chemical US Operations, LLC
Convent, St. James Parish, Louisiana
Methylene Diphenyl Diisocyanate Plant (MDI)

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\$1.12 Billion Methylene Diphenyl Diisocyanate Plant (MDI)

Production - 400,000 metric tons per year of MDI

Grass roots polyurethane facility. MDI is used in making polyurethanes

To Produce MDI and Ethylene Dichloride (EDC)

250 acre site at the northwest corner of LA 3125 and La 3214 on the east bank of the Mississippi River – near Mosaic Uncle Sam and Occidental Chemical

170 new jobs, 1,230 new direct and indirect jobs, 1,000 construction jobs during peak construction activities

Louisiana has offered \$4.3 million grant to offset infrastructure cost

Workforce Development Program

LED FastStart Quality Jobs Program

Industrial Tax Exemption Program

Wanhua Chemical Group was founded in 2001 and is a Chinese Chemical Company that is the world's largest producer of isocyanate in terms of capacity, 2.1 million tons per year. In 2017, the world production of MDI was 7.5 million tons and the Wanhua Group was the largest producer.

Wanhua has two MDI plants in China and one in Hungary. The China MDI plants are located in Ningbo and Yantai.

The Yantai Plant in China had an explosion in September 2016 that killed four and injured 4 individuals. The Yantai MDI Plant had an apparent clean industrial safety record until the explosion.

At the time of the 2016 Yantai Plant explosion, Greenpeace released a report on the Chinese Chemical Industry's poor safety record. There were 232 chemical related accidents in China between January and August 2016, almost one per day. One fourth of the accidents were associated with production and more than one half occurred during shipping. There were 199 deaths and 400 injuries.

BHOPAL Disaster

On the night of December 2-3, 1984, the Union Carbide pesticide plant in India leaked/released, into the air, between 30 and 40 tons of highly toxic Methyl Isocyanate and other poisonous gases. The air emissions exposed more than 500,000 people to the toxic gases. Approximately 4,000 people were quickly killed and a total of 15,000 people were killed over the next few years.

As a result of this one event, major regulatory changes were adopted in the United States to address the threats of chemical storage, manufacture and releases of hazard and toxic chemicals and materials and requirements to report to the public the toxic chemicals manufactured, processed and stored at industrial facilities.

MDI Chemical Process

React Aniline and Formaldehyde using Hydrochloric Acid as a catalyst to produce a mixture of Diamine precursors and Polyamines.

Diamine treated with Phosgene to form a mixture of Isocyanates.

Distillation of the mixture gives a mixture of Oligomeric Polyisocyanate known as a Polymeric Isomer mixture.

The crude MDI is further refined into monomeric MDI and polymeric MDI.

MDI Production Units

MDI Thermal Oxidizer	Toluene Distillation Column
Phosgene Stripper	MDA Secondary Reactor
MCB Stripper	MDI Destruct Tower
MCB Purification Column	MDI Cooling Tower
Pure MDI Column	MDI Storage Tanks
Main Phosgene Reactor	MDI Carbon Adsorption Bed
MDI Flare	MDI HCL Scrubber Tower
MDA Main Reactor	HCL Absorption Column
Neutralization Reactor	MDI Reactor
MDA Extraction Column	Product Loading Units
Aniline Stripper	Waste Water Extraction Column

BASF Corporation, Geismar, Ascension Parish - Two MDI Plants

The BASF Corporation in Geismar, Louisiana is an integrated chemical manufacturing facility. The site has an Acetylene Plant, Specialty Amines Complex, Ethylene Oxide/Ethylene Glycol Plant, two Methylenediphenyl Diisocyanate (MDI) Plants, Vinylpyrrolidone/Polyvinylpyrrolidone (NVP/PVP) Plant, Polyol Plant, Surfactants Plant, Toluene Diisocyanate (TDI) Plant, Formic Acid Plant and two Aniline Plants.

The two BASF MDI Plants produce 300,000 metric tons per year of MDI. A major expansion, begun in 2018, will increase the overall capacity to slightly less than 600,000 metric tons of MDI per year.

Since **Wanhua** air permit application information is not yet available, on the Louisiana Department of Environmental Quality Electronic Data Management System, the chemicals permitted by DEQ for the two MDI Plants at BASF will be used to demonstrate the chemicals that will potentially be released into the air by the Wanhua proposed plant and the health impacts associated with the chemicals to be released into the air.

Air Emission Chemicals

Aniline	Methylenediphenyl Diisocyanate (MDI)
Benzene	Methylene Diphenyl
Carbon Tetrachloride	Phosgene
Chlorobenzene	Toluene
Chloroform	Tetrachloroethylene
Formaldehyde	1,2-Dichloropropane
n-Hexane	4,4'-Methylenebisbenzenamine
Methanol	Hydrochloric Acid (HCL)
Methyl Ethyl Ketone (MEK)	

Health Impacts of Chemicals to be Released into the Air by the Wanhua Methylene Diphenyl Diisocyanate Plant (MDI)

Acute Health Impacts

Irritates the skin, eyes, nose, throat, mouth and lungs.

Causes rashes, coughing, wheezing, headaches, fatigue, drowsiness, trouble breathing, lightheadedness, dizziness, weakness, muscle pain, nausea, upset stomach, vomiting and diarrhea.

Effects the nervous system, concentration, causes memory loss, lack of coordination, blurred vision, disturbance of sleep, trouble concentrating, irritability, convulsions, asthma, buildup of fluids in the lungs and chronic pulmonary edema, bronchitis.

Chronic Health Impacts

Known and suspected human carcinogens.

Causes cancer of the nasopharynx, spleen, liver, kidney, lungs, thyroid, brain, bladder, esophagus, intestines.

Causes leukemia (blood cancer).

Known and suspected teratogen (malformation of embryo).

Damages lungs, liver, kidneys and nervous system.

Damages developing fetus.

Damages testes, male reproduction system.

Decreases sperm counts.

Damages female organs and causes reproductive cycle disorders.